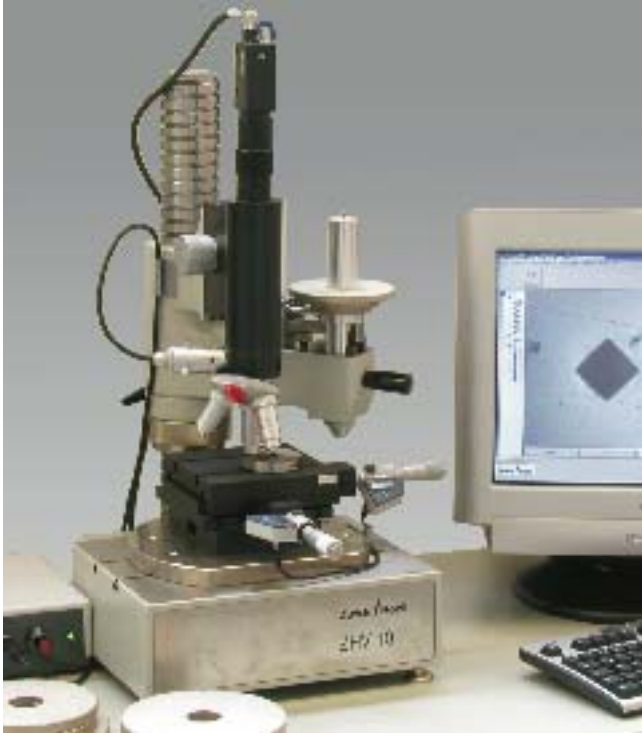


## Product Information

### Zwick/ZHV 10 Vickers hardness tester



#### Range of application

- Can be used for all hardness test methods that evaluate via optical measurement of the indentation:
  - Vickers hardness to DIN EN ISO 6507
  - Knoop hardness to ASTM E 9385
  - Brinell hardness to DIN EN ISO 6506
  - case hardening, hardening and nitride hardening depth,
  - as well as the scratch hardness (3212001)
- Low-load range's test loads (HV0.2 ... HV10) are achieved via dead weights

#### Advantages/Features

- Two variants are available:
  - Analogue tester 3212001 with evaluation via the enclosed hardness tables
  - PC Tester 3212003 with automatic evaluation (indentation measurement on a PC monitor)
- Simple operation
- Flexible test area height, can be swivelled by 180°
- Direct mass (weight) loading with low friction guided indenter

- Hand crank for starting the loading procedure at generation of an indentation, as well as for load removal
- Microscope with a series revolver head for up to 4 objective lenses
- Different objective lenses for a wide range of magnifications and picture ranges
- The PC model works in conjunction with the test software *testXpert*®. This software is highlighted especially by its simple operation and adaption to changing test conditions
- A master test program for Vickers, Knoop and Brinell hardness tests for series measurements is available. Hardness sequence measurements and automatic indentation measurement is possible as an option
- Manual, manual with data transmission or motorised moving compound table variants are available
- Prisms, clamping devices and parallel vice are optional extras

## Product Information

### Zwick/ZHV 10 Vickers hardness tester

| Order item                             | 3212001   | 3212003   | Unit |
|--|---|---|------|
|  | Value   | Value   |      |
| Measurement method                     | analogue  | digital   |      |
| Test data evaluation                   | manual  | automatic   |      |
| Loading assembly                       | with direct mass (weight) loading                               |   |      |
| Test table's support surface           | 300 x 230   | 300 x 230   | mm   |
| Test height                            | 0 ... 300   | 0 ... 300   | mm   |
| Throat                                 | 135   | 135   | mm   |
| Test load stages                       | 1.96/2.94/4.9/9.8/19.6/29.4/49/98/(294)                         |   | N    |
| Indentation time                       | 0 ... 10  | 0 ... 10  | sec  |
| Optical indentation measurement device | Microscope with monocular<br>(bright field illumination system) | Microscope with CCD camera<br>and digitalisation card<br>(bright field illumination system) |      |
| Electrical connections                 | 110/220 A.C.  | 110/220 A.C.  | V    |
| Dimensions (height x width x depth)    | 600 x 400 x 350   | 600 x 400 x 350   | mm   |
| Mass (weight)                          | approx. 50 nett / 90 gross                                      | approx. 50 nett / 90 gross  | kg   |

#### Objective lens for the Vickers hardness testers Zwick ZHV/10

| Order item   | 3212.02       | 3212.03       | 3212.04/.07 <sup>13</sup> | 3212.05        | 3212.06        |
|--|---------------|---------------|---------------------------|----------------|----------------|
| Inherent magnification                             | 5:1           | 10:1          | 20:1                      | 40:1           | 60:1           |
| <b>Equipment for 3212001</b>                       |               |               |                           |                |                |
| Total magnification                                | 50:1          | 100:1         | 200:1                     | 400:1          | 600:1          |
| measurement range                                  | 0 ... 2.4 mm  | 0 ... 1.2 mm  | 0 ... 0.6 mm              | 0 ... 0.3 mm   | 0 ... 0.18 mm  |
| <b>Equipment for 3212003<sup>1</sup></b>           |               |               |                           |                |                |
| Total magnification <sup>1</sup> (for 17" monitor) | approx. 136-x | approx. 275-x | approx. 550-x             | approx. 1100-x | approx. 1600-x |
| Field of view <sup>2</sup> horizontal              | 1760 µm       | 880 µm        | 440 µm                    | 220 µm         | 147 µm         |
| vertical   | 1320 µm       | 660 µm        | 330 µm                    | 165 µm         | 110 µm         |
| Picture resolution                                 | 2.3 µm/Pixel  | 1.2 µm/Pixel  | 0.6 µm/Pixel              | 0.3 µm/Pixel   | 0.2 µm/Pixel   |

<sup>1</sup> This equipment includes a video adapter with a high inherent magnification (approx. 40 fold) is integrated in the measurement microscope in front of the CCD camera

<sup>2</sup> The permissible measurement ranges are described in detail in the corresponding test standards. A Vickers indentation should be at least 1/3 of the vertical field of view to be able to achieve a resolution of 0.2 µm (d < 40 µm) or 0.5% of d (d ≥ 40 µm) to, for example, DIN EN ISO 6507-2

<sup>3</sup> 3212.07: objective extended

#### Indenters

| Description  | Order item          |
|--|---------------------|
| Indenter (Vickers pyramide 136°)   | <b>065240.01.00</b> |
| Indenter (diamond pyramide to Knoop)   | <b>065240.03.00</b> |
| Indenter (hard metal ball dia. 1 mm)   | <b>065240.18.00</b> |
| Indenter (diamond cone 120°) for scratch tests   | <b>065240.10.00</b> |
| Vickers indenter, long (for use with order item 3212.07, objective 200 fold, extended) | <b>3212.11</b>      |

#### Compound tables

| Description   | Order item          |
|---|---------------------|
| Compound table with Fmax 1 kN (table size 200 x 200 mm)<br>- travel 25 x 25 mm, manual micrometer         | <b>3212.34</b>      |
| Compound table with Fmax 500 N (table size 135 x 135 mm)<br>- travel 50 x 50 mm, manual micrometer        | <b>065243.05.00</b> |
| - travel 25 x 25 mm, digital micrometer, digital display and transmission of the position                 | <b>065243.06.00</b> |
| Adapter plate for compound tables at the materials testing machine, fixing directly to the base crosshead | <b>3212.34.01</b>   |